

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 18 OCT 2004

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Applicant's or agent's file reference K-1920PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/27610	International filing date (day/month/year) 02 September 2003 (02.09.2003)	Priority date (day/month/year) 03 September 2002 (03.09.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): B23B 3/00,9/10 and US Cl.: 82/118		
Applicant KENNAMETAL, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 35.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26 March 2004 (26.03.2004)	Date of completion of this report 13 September 2004 (13.09.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Andrea Wellington Telephone No. 703-308-1148

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description:
pages 1-10 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the claims:
pages NONE, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages 11-14, filed with the letter of 13 August 2004 (13.08.2004)
- ☒ the drawings:
pages 1-7, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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International application No.
PCT/US03/27610**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>4,5,14,16</u>	YES
	Claims <u>1-3,6-13,15,17-19</u>	NO
Inventive Step (IS)	Claims <u>5</u>	YES
	Claims <u>1-4,6-19</u>	NO
Industrial Applicability (IA)	Claims <u>1-19</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-3, 6-13, 15, 17-19 lack novelty under PCT Article 33(2) as being anticipated by DATE et al. '253. Date discloses a machine tool comprising at least one linear axis (disclosed in the instant invention as any of the X, Y and Z axes). Date also discloses both a rotary axis (Cs) and a rotational axis (Cw), the rotary axis programmable to move to a location in conjunction with a movement of the linear axis (col. 11, lines 10-30, specifically lines 16-22). Date also discloses a tool holder mounted to a tool rest (on the rotary axis Cs) including a cutting tool inherently defining both a lead and trailing angle with respect to the workpiece wherein the angle(s) remain constant as a vector movement of linear axis is changed. Date clearly illustrates this capability in comparing both figures 31 and 22A as well as their respective descriptions in the disclosure of Date (generally between col. 27, line 26 and col. 28, line 21).

Date further discloses rotation of the cutting tool wherein the angle of the lead angle or the trailing angle remains constant by controlling the movement of the rotary axis Cs about an axis that is not the centerline of the workpiece (see fig. 32, for example).

Date further discloses the position of the cutting insert (and therefore the associated angles thereof) can be altered after a roughing pass but before a finishing pass to present a different side of the cutting insert to the workpiece (similar to the instant invention). The various angles associated with cutting are changed during the machining process in embodiments two and three of Date (generally at figures 30-35, but clearest in figures 33A and 33B).

Date also discloses various embodiments with various cutting tools. At least two tools shown (figures 10 and 11) have a nose radius that is substantially concentric with a long axis of the holder.

Date discloses the rake angle of the cutting tool may be modified (changed) during machining, this, inherently, includes placing the rake face perpendicular to the axis of the tool holder (col. 2, lines 26-33).

Date explicitly discloses the use of NC machining (a subset of which is CNC) and since Date explicitly discloses moving at least a portion of the machine tool on the linear axes, it is inherent that the NC is calculating and controlling the machine such that the tool reaches a certain point of the workpiece at a certain point of time.

Date discloses a plurality of retaining configurations through the various embodiments of the invention. Figures 12, 13 and 22 disclose elements that could be referred to as clamps.

Date sets forth the appropriate method steps according to the apparatus set forth above. See col. 27, line 26-col. 28, line 21.

Date further sets forth the above elements and discloses the cutting element is programmably movable with respect to the workpiece in all three axes.

Please See Continuation Sheet

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VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 15 is objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof: Claim 15, line 8-9, it is not clear what is being claimed by the phrase "...movement of at least one of the linear axis is changed".

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

V. 2. Citations and Explanations:

Claim 16 lacks an inventive step under PCT Article 33(3) as being obvious over KNOTT '454. Knott discloses a method of machining a workpiece wherein the cutting tool (10) may be positioned on either side of the centerline of a workpiece. If the tool is relocated to an opposite side of the centerline, the direction of rotation of the workpiece is reversed. See Knotts, col. 3, lines 1-5. Knott does not expressly disclose using the flank face of the cutting tool for performing a machining operation. The use of the flank face instead of the cuttingface to perform a machining operation is considered a design choice and furthermore one of ordinary skill in the art would have expected Applicant's invention to have performed equally well with any of the various inserts that are currently on the market and which have cutting blades on two sides.

Claims 4 and 14 lack an inventive step under PCT Article 33(3) as being obvious over DATE in view of KNOTT. Date discloses all of the elements as set forth in the above rejections, however, Date fails to disclose a reversing of rotation of a workpiece based on tool location. Knott discloses inherently a machining a workpiece wherein the cutting tool (10) may be positioned on either side of the centerline of a workpiece. If the tool is relocated to an opposite side of the centerline, the direction of rotation of the workpiece is reversed. See Knotts, col. 3, lines 1-5.

Claim 5 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest specifically using a lead angle of a cutting tool to anticipate interference with a workpiece in a machining operation.

Claims 1-19 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

NONE